

Homework 5

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Contents

1	Page 228: problem 1	2
1.1	Model to solve for long-term percentage	2
2	Page 232: problem 1	3
3	Page 240: problem 1	3
4	Page 240: problem 2	3

1 Page 228: problem 1

Consider a model for the long-term dining behavior of the students at College USA. It is found that 25% of the students who eat at the college's Grease Dining Hall return to eat there again, whereas those who eat at Sweet Dining Hall have a 93% return rate. These are the only two dining halls available on campus, and assume that all students eat at a one of these halls. Formulate a model to solve for the long-term percentage of students eating at each hall.

Table 1: Present - Next State for Dining

		NEXT STATE	
		Grease Dining Hall	Sweet Dining Hall
PRESENT STATE	Grease Dining Hall	.25	.75
	Sweet Dining Hall	.7	.93

1.1 Model to solve for long-term percentage

$$Grease_{n+1} = .25 Grease_n + .7 Sweet_N$$

$$Sweet_{n+1} = .75 Grease_n + .93 Sweet_N$$

2 Page 232: problem 1

Consider a stereo with CD player, FM-AM radio tuner, speakers (dual) and power amplifier (PA) components, as displayed with the reliability. Determine the system's reliability. what assumptions are required in your model?

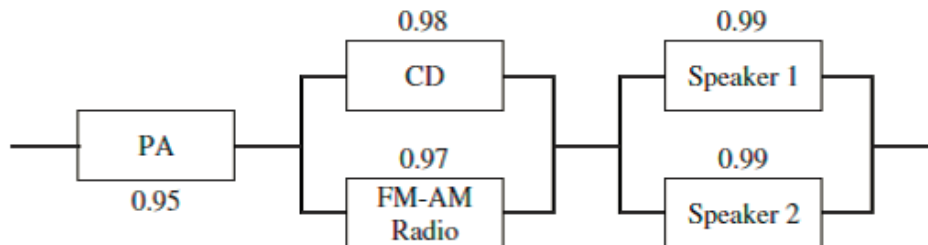


Figure 1: image.

Component Reliability

$$R_{s1} = 0.95$$

$$R_{s2} = 0.98 + .97 - (.98 * .97) = 0.9994$$

$$R_{s3} = .99 + .99 - (.99 * .99) = 0.9999$$

Entire system reliability:

$$R_{s1,s2,s3} = .95 * 0.9994 * 0.9999 = 0.9493351$$

3 Page 240: problem 1

4 Page 240: problem 2